Sleep fragmentation and limb movements in children with nocturnal enuresis and polyuria.

K.Dhondt[1], C. Van Herzeele[2], A. Raes[2], L.-A Groen[3], P. Hoebeke[3], J. Vande Walle[2]

[1] Pediatrics, dept. Child Neurology & Metabolism, Pediatric Sleep Center. Ghent University Hospital, Belgium.

[2] Pediatrics, dept. Child Nephrology, Ghent University Hospital, Belgium.

[3]Dept. Urology, Ghent University Hospital, Belgium.

Introduction

• Study design: to explore the impact of sleep fragmentation in children with primary monosymptomatic nocturnal enuresis (MNE) and nocturnal polyuria (NP). Sleep was investigated in relation to enuretic parameters: fluid intake, maximum and average voided volume, number of wet nights and nocturia.

•Secondly, we were interested in the comparison of the registered periodic limb movements in sleep (PLMS) to previous findings in children with refractory NE. J.Urol.2009, Dhondt et al.

Material and methods

30 patients (6-16 years) with primary MNE and NP were recruited from the paediatric nephro-urology clinic.

**NE parameters:* daytime diary (four days); NE (14 consecutive nights); maximum voided volume; uroflow; post-void residual volume by ultrasound.

**General demographic questionnaire*

**One night video-polysomnographic study*

**Actual PLMS:* compared with those of the pilot study (identical methodology; 29 children, 5-19 years)

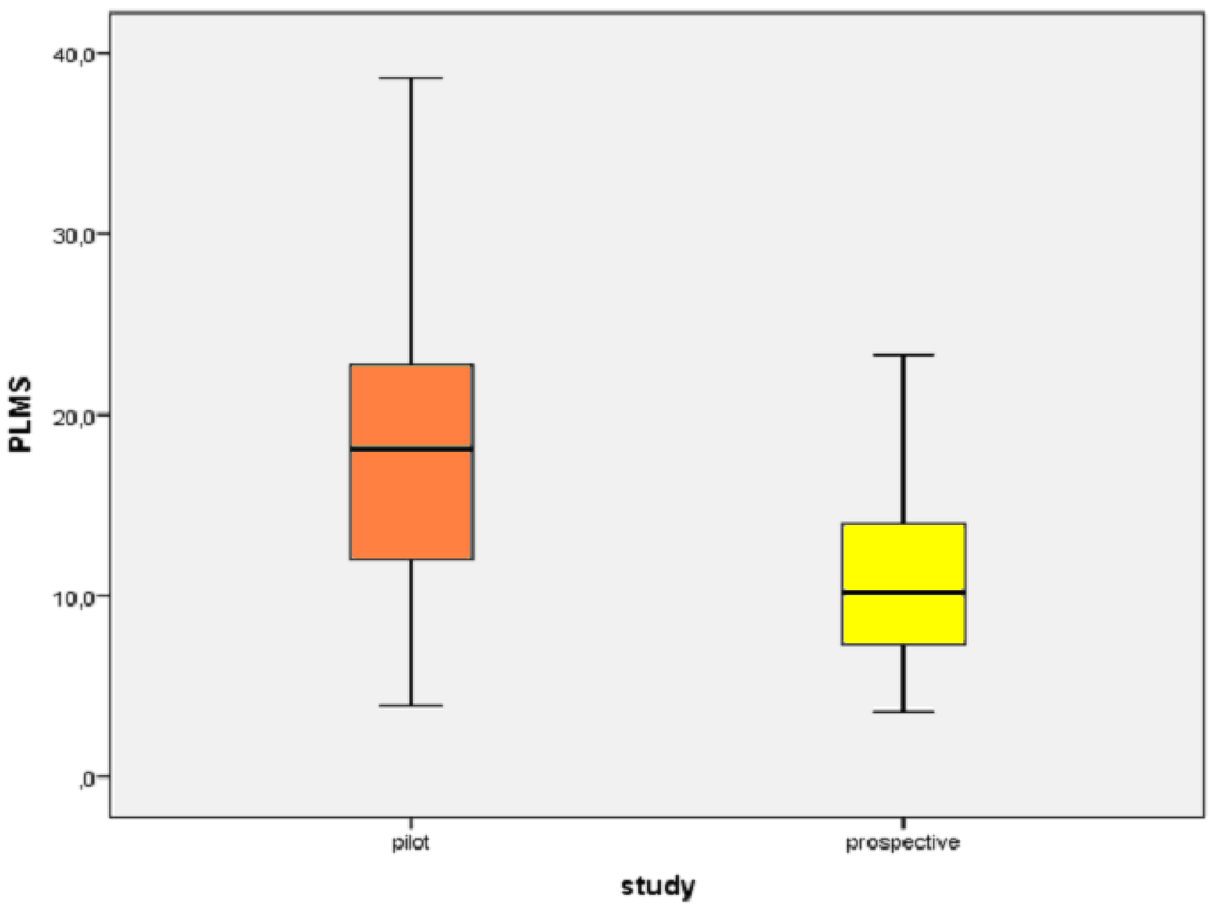
Results

	A-index	AA-index	AH-index	PLMS-index
Fluid intake	-0.049	-0.051	0.503**	-0.117
Vv average	-0.114	-0.107	0.330	-0.262
Vv max incl	-0.085	-0.109	0.377*	-0.089
N_ wet nights	0.076	0.114	0.193	0.017
N_ wet nights or nocturia	-0.155	-0.089	0.170	-0.049
N_ nights NP=100	-0.120	-0.237	-0.028	-0.009
PLMS-index	0.744**	0.628**	-0.120	1.000

Correlation coefficients: two by two combinations (**p<0.001; *p<0.05).

Index: n per hour of sleep; A: arousal; AA: awakening; AH: apnoea-hypopnoea; PLMS periodic limb movements in sleep

PLMS: MNE and NP vs refractory NE (p<0.001)



Conclusion

- PLMS and cortical arousals in sleep are increased (>5) in children with MNE and NP.
- No correlation was found with the enuretic parameters.
- Children with refractory NE show higher PLMS-index.
- The presence of PLMS probably constitutes a comorbid phenomenon, driven by a common but independent pacemaker. We hypothesize the autonomic system, its sympathetic branch, and the dopaminergic system as a candidate.